

The Outboard Assembly, 1951 Evinrude "Big Twin" 25

By: Steve Silverthorn

The hard part is done!! You pulled your motor apart, repaired or restored some of all of the motor and now is ready to go back together. This article is the 2nd in a series. The first article was titled "The Outboard Teardown" and was published in the March 2021 MLAOC Newsletter. The takeaways from the "Teardown" article were the following:

1. It's all in the Preparation
2. Take your time
3. Stay Organized

Remember my reference in Article 1 to your cottage neighbour with that box full of outboard parts in the corner of his garage, with no idea of the status of the motor, or how to put it back together. This article is trying to make sure you are not that guy!!

Authors Notes

The 1951 Evinrude 25 HP that I took apart for the 1st Article was for full restoration. At the end of the article the motor was a pile of pieces (pic 1). For my restoration I media blasted all the parts (pic 2), primed and painted it, reassembled the motor and re-decaled. Mechanically I replaced all the ignition components, the lower end seals and water pump impeller, rebuilt the carb with a new kit, new hoses and replaced any worn parts.

Before assembly my motor looked like the picture (pic 3).

Your level of restoration or repair may not be this deep, but this is our starting point for this article.

Before Assembly

If there is repair work to do on any components now is the time. Especially if you paint, replace broken parts and test fit the components. On this motor the hood splits down the middle and becomes 2 parts. Not very user friendly to take the hood off or on. It requires the removal of 11 bolts to take the hood off the motor. All the fasteners for this hood were wrong, initially. Over the years lots of parts get lost and it's up to you to replace what you think is necessary. I like to make sure all the nuts, bolts and washers are the correct ones, and they are all in place. In my case, I figured out what special bolts I needed for this hood and went to Bolts Plus (chain store) and got all the proper fasteners. Once you do these test fits you will be all set to paint or assemble know it will go together well. There is nothing worse than damaging the fresh paint on the hood while wrestling to install it, and then having to paint again.



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Organization Pays Off

In the first Article we talked about organization and making sure you know where all the parts go that you removed. Two strategies for this were:

- A) take lots of pictures before and during disassembly and;
- B) as you remove the small parts, like nuts, bolts and springs, put them in a clear sandwich bag and label them. (Pic 4) illustrates my parts assortment for this 51' Evinrude. You will notice on the far left is a bin labelled different, that says 56' Javelin. This is because I often do two restorations at once (keeps it interesting) but it is only possible because of keeping organized (and sometimes that doesn't even work ☹️)

Initiate the "Parts Cannon"

OK, now we are ready to start throwing parts onto this motor. Start with the exhaust housing on a solid stand (pic 5). Make sure you have a good supply of white lithium grease. (Pic 6). I concentrate greasing parts that you need to apply while assembling. We will touch on these as we move ahead. Also, you need a tube of adhesive sealer to put on certain parts. This needs to be a sealer that is impervious to fuel. The best one I have found is made by 3M and is called 847 Rubber and Gasket Adhesive. There are very few places you can buy this, likely because of all the VOC's in it, but try a marine dealer.

Install the engine first. Make sure you have new base gasket(s) and that they fit properly. Use the 3M adhesive described above on both sides of these gaskets. Drop the engine on and put all the screws and nuts in and tighten.

Top Down Approach

Next install the retaining ring and support for the armature plate. Remember that we carved an "F" into the front of this plate upon removal so it's easy to locate the holes to reinstall. Make sure this is well greased and secure, and your retaining ring is the right way up (pic 7).

Now install the armature plate. Make sure any throttle linkage is out of the way when securing this plate. (pic 8) Recall that prior to this assembly I have replaced the points, coils and condensers and plug wires. Leave the plug ends of the wires without the boots on them for now, as they need to be trimmed later. Once the armature plate is secure move it back and forth to ensure it is not binding. It should be easy to move. Look back at your pictures if you have any questions about where wires from the plate go. The flywheel can go on at this time too. Make sure it's torqued to the correct specifications. This torque value will be in a chart in the back of your after-market repair manual you purchased for the disassembly.

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Next fasten the carburetor to the power head, connect the linkage and install your fuel pump (if you have one) and begin to run your fuel, air and vacuum lines. Make sure you don't hook up your "fuel" and "air" lines backwards, if you have this type of motor. Install your fuel fitting on the exterior so you can install your lines. Don't use gear hose clamps on the lines. They make a plastic zip tie especially for hose (has a curved head, unlike a regular zip tie). Use these on all hose connections.

Also install the throttle linkage above the carb. Make sure that all washers and NEW cotter pins are in place (pic 9). Install the throttle lever on the side of the engine and connect to the armature plate to it and connect the rest of the throttle linkages to the carb. Now operate the full range of motion of the throttle and armature plate. Note that this motor has a cable driven throttle system, which disappeared in 1955 (for good reason) (pic 10).

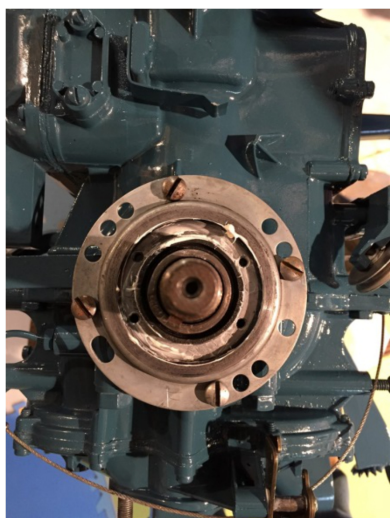
You can now put both side brackets on, continuing to ensure that any electrical wires from the starter, ground strap, choke or armature plate are properly routed through the brackets. If your motor has electric start with a plug on the side (or hole in the front), the internal wiring harness should be installed now, as it is easier to connect the wires before all brackets are in place. This may require you to install the front and back pans (or lower covers). As this pan will have the hole in it to accept the internal wiring harness. The cowl gasket can also be installed on the pans.

Now install the shifter lock bar, which provides the indents for your shift lever. This usually has a special bolt and washer.

Make sure you use the correct hardware, and apply grease to its fastening point. There is a spring to install as well, which you can do by hand. The final piece to install is the recoil starter that bolts on the top over the flywheel. 3 bolts usually secure this. It now looks like a motor again. Congratulations!

At this point you can attach any other parts, like a rear handle or the tiller handle, if you had them off for restoration.

The lower unit can also be attached at this point. I leave it to the last because the motor is a lot lighter to carry from the basement to the garage without the lower unit on it. Grease the splines at the top of the drive shaft, and a bit of grease in the gromet in the top of the water pump housing. With screws in hand, work the lower unit up until the driveshaft engages with the splines in the bottom of the motor. Then, with a flashlight make sure the water tube from the motor engages with the rubber gromet in the top of the water pump as you slide the lower unit up tight, and install your screws. Lastly connect the shift linkages from the motor and lower unit, commonly through an access hole through the side of the exhaust housing. If your shift linkage connects a different way you will know already, because you disassembled it. A coating of grease on the prop shaft and you can install the shear pin and prop with a NEW cotter pin. **Cont'd pg. 14**



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TIP- Notice in (picture 11) there is a cover over the shift lever. This is the thumb cut out of an old glove. This is to protect the shift lever from scratches if you have painted it. This shift lever sticks out and is easily damaged during assembly. If you are not concerned with the paint, then there is no need to cover it.

The "Final Mile"

Now for the fussy stuff. I usually use electrical tape and tape the first 6 inches of the spark plug wires starting from the armature plate. This protects the wires and saves them possibly getting caught in the flywheel at some future point. (pic 12) Also notice in the picture the clamp that attaches the plug wires to the motor. Make sure these supports are in place and as you move the throttle from high speed to low the plug wires do not get hung up on the motor. You can check for spark at this point, if you wish. Make sure your fuel lines are secured with brackets, if they were on the motor initially.

Install 2 new spark plugs, gapped correctly, into the head. Then trim the spark plug wires to the correct length if necessary, and then install the connectors that go on the end of the wires, and install on the plug. Continue to ensure that the plug wires are long enough for complete movement of the armature plate.

Icing on the Cake

You can now put the hood on. If the hood is like the one on this motor, then it takes lots of time to line it up and get the screws in properly. For screws that are painted you can put some masking tape on your screwdriver to limit the damage to the screw head. You can now put your decals on the hood, and the carb knobs and choke. (Pic 13) I always put the decals on when the hood is on the motor, and make sure the motor is sitting level. If the decals you are putting on are clear vinyl make sure your hands are clean, or you will have a "greasy thumb print" on your decal.

Assembly Complete

Your motor is done! Congratulations. Don't forget to put oil in the lower unit and 2 cycle oil in the gas. Start it up and have fun!



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